Environmental Resources Management

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11 August 2018
Reference: 0042525

VIA ELECTRONIC MAIL

Mr. Will Geiger
Remedial Project Manager
U.S. Environmental Protection Agency, Region III
1650 Arch Street
Philadelphia, PA 19103-2029

RE: North Penn Area 2 Superfund Site/Former AMETEK Facility
Progress Report for January – June 2018

Dear Mr. Geiger:

On behalf of AMETEK, Inc. (AMETEK) and Penn Color, Inc. (Settling Defendants), Environmental Resources Management, Inc. (ERM) hereby submits this progress report pursuant to Section X of the Consent Decree (Consent Decree) executed between the Settling Defendants and the United States of America and entered on 10 February 2011. This progress report covers January – June 2018.

SUMMARY OF ACTIVITIES PERFORMED IN REFERENCED PERIOD

1. Recovery wells PW-3 and MW-2 were operated to recover volatile organic compound (VOC)-impacted groundwater. See the Summary of Data section below.

2. The Settling Defendants continued Wetland and Surface Soil operation and maintenance (O&M) activities, including the following.
    a. ERM inspected the wetland and surface soil area restorations (plantings and seeded areas).

3. The Settling Defendants continued Groundwater O&M activities, including the following.
    a. ERM conducted a Site-wide groundwater elevation survey (39 wells – MW-2S was unable to be gauged) on 30 April 2018.
    b. ERM collected surface water samples and surface water elevation measurements from four locations on 30 April 2018.

c. ERM performed the annual groundwater sampling on Group 2 wells (25 wells). Sampling began on 30 April 2018 and was completed on 9 May 2018.

4. The Settling Defendants submitted to USEPA an e-mail-based PFAS Sampling Work Plan on 9 November 2017. USEPA requested a more formal work plan. ERM submitted to USEPA the Sampling and Analysis Plan Addendum for Perfluoroalkyl Substances on 23 February 2018. USEPA provided comments on 7 May 2018. ERM is in the process of revising the document based on comments from USEPA.
5. The Settling Defendants performed the following tasks related to the potential vapor intrusion topic:
    a. Collected a second round of sub-slab soil vapor samples on 2 March 2018.
    b. Performed a sub-slab depressurization pilot test for Building 1 on 24 March 2018.
    c. Installed a horizontally-bored soil vapor collection pipe under Building 1 on 13 June 2018 for use during a high-vacuum sub-slab depressurization test.
    d. Performed a high-vacuum sub-slab depressurization pilot test for Building 1 on 22 June 2018.

SUMMARY OF DATA RECEIVED OR GENERATED IN REFERENCED PERIOD

1. Table 1 contains the groundwater sample analytical data for the Annual groundwater sampling event conducted between 30 April 2018 and 9 May 2018. Results of this sampling event remain consistent with recent historical results. Group 1 wells, other than the recovery wells, continue to be below the remediation goals, which indicates that the groundwater capture system continues to be effective. Concentrations of groundwater collected from perimeter well, MW-13D, exceeded the arsenic cleanup standard. It should be noted that arsenic concentrations at MW-13D have been detected above the cleanup goal of 10 µg/L since prior to remedy implementation. However, following the remedy construction, the concentration has reduced from 20 µg/L to 15.1 µg/L suggesting that the remediation could be having a positive effect on this condition. The reported arsenic concentration at MW-13D during the April/May 2018 sampling event was 16.1 µg/L.

2. Table 2 contains the surface water sample analytical data for the surface water events conducted on 30 April 2018. All the surface

water sample results were below the remediation goals (Surface Water Criteria), which indicates the wetlands remediation work has been effective.

3. Tables 3 through 5 summarize the recent performance data for recovery wells PW-3 and MW-2. The most recent estimate of the amount of VOCs remaining in the bedrock groundwater is depicted graphically on Figure A.

4. Tables 6 contain the groundwater level and surface water level monitoring data collected on 30 April 2018.

5. Pumping rate and static water level monitoring data were evaluated to assure maintenance of hydraulic control over the contaminant plume. Figures 1 through 3 are potentiometric surface maps for respectively the shallow, intermediate, and deep wells and are based on the 30 April 2018 groundwater level monitoring. The figures indicate groundwater drawdown and capture is apparent.

6. Figure 4 presents the sub-slab soil vapor sample results from the November 2018 and March 2018 sampling events.

SUMMARY OF DELIVERABLES SUBMITTED IN REFERENCED PERIOD

1. The progress report for 2017 was submitted on 15 May 2018.

2. The Settling Defendants submitted to USEPA an e-mail-based PFAS Sampling Work Plan on 9 November 2017. USEPA requested a more formal work plan. ERM submitted to USEPA the Sampling and Analysis Plan Addendum for Perfluoroalkyl Substances on 23 February 2018. USEPA provided comments on 7 May 2018.

ANTICIPATED ACTIVITIES FOR THE NEXT PERIOD

1. The Settling Defendants will continue Wetland and Surface Soil RA activities, including the following.
    a. The wetland and surface soil area restorations (plantings and seeded areas) may be monitored.

2. The Settling Defendants will continue Groundwater RA activities, including the following.
    a. PW-3 and MW-2 pump maintenance and/or replacement will be performed as necessary.

b. PW-3 and MW-2 operations and pumping rates will be monitored.

3. The following monitoring and sampling events will be performed.
    a. Semiannual groundwater sampling of Group 1 wells (7 wells), site-wide wells water level gauging (40 wells), and stream gauging and sampling (4 locations) – anticipated for October/November 2018.
4. The Settling Defendants will submit the revised Sampling and Analysis Plan Addendum for Perfluoroalkyl Substances to USEPA.
5. It is anticipated that the PFAS Work Plan will be approved in 2018, and as a result, groundwater sampling for PFAS compounds will be conducted.
6. The Settling Defendants will prepare and submit to USEPA a sub-slab depressurization system design for a portion of Building 1.

SCHEDULE PERCENT COMPLETION AND DELAYS

1. Not applicable at this time.

MODIFICATIONS TO PLANS OR SCHEDULES

1. There are no modifications to the work plans or other schedules at this time.

COMMUNITY RELATIONS

1. Not applicable at this time.

Please review this information and, if you have any questions, please call me at 484-913-0360 or Rich Dulcey at 609-403-7509.

Sincerely,

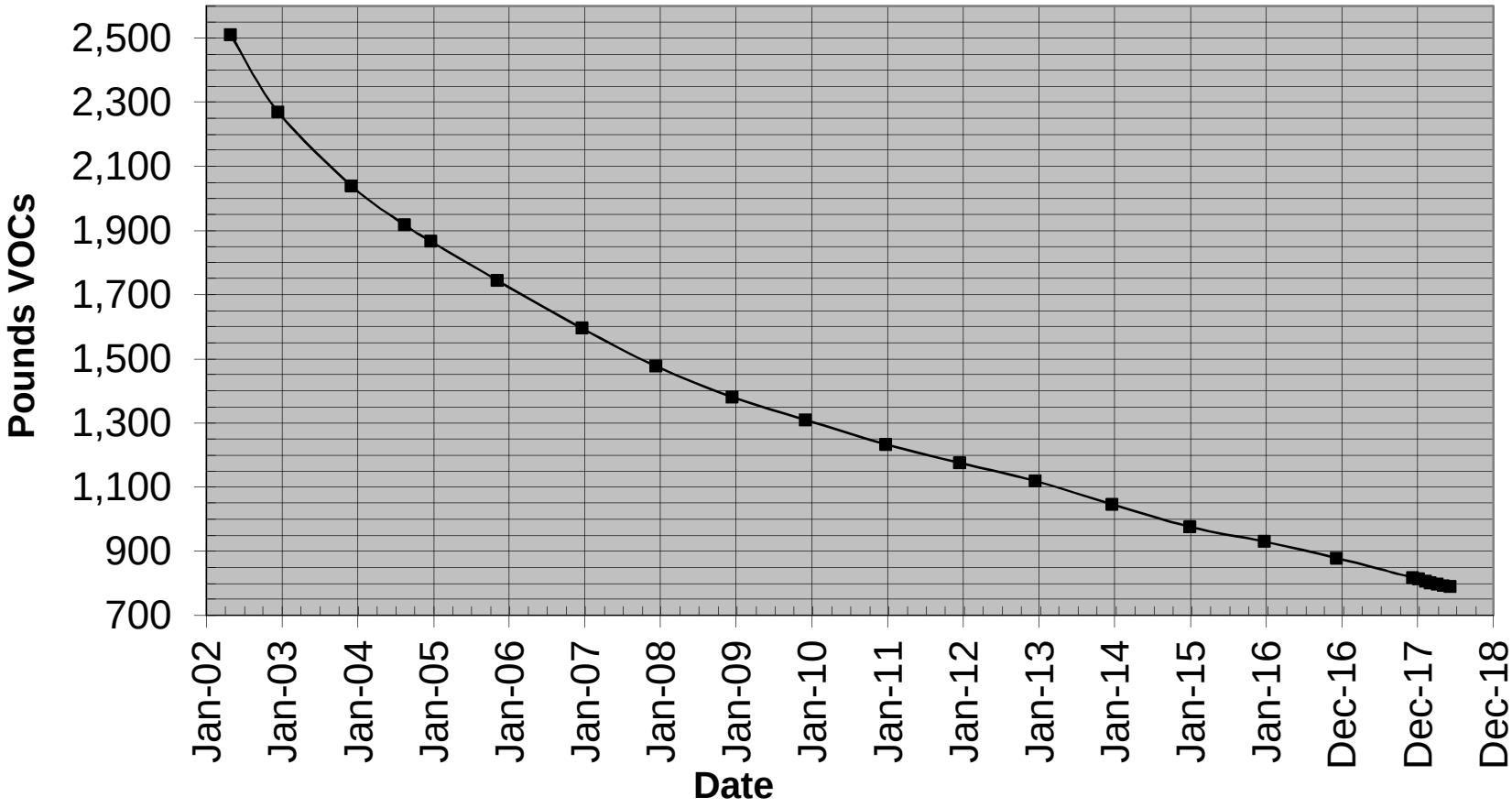
Jacob D Ferry

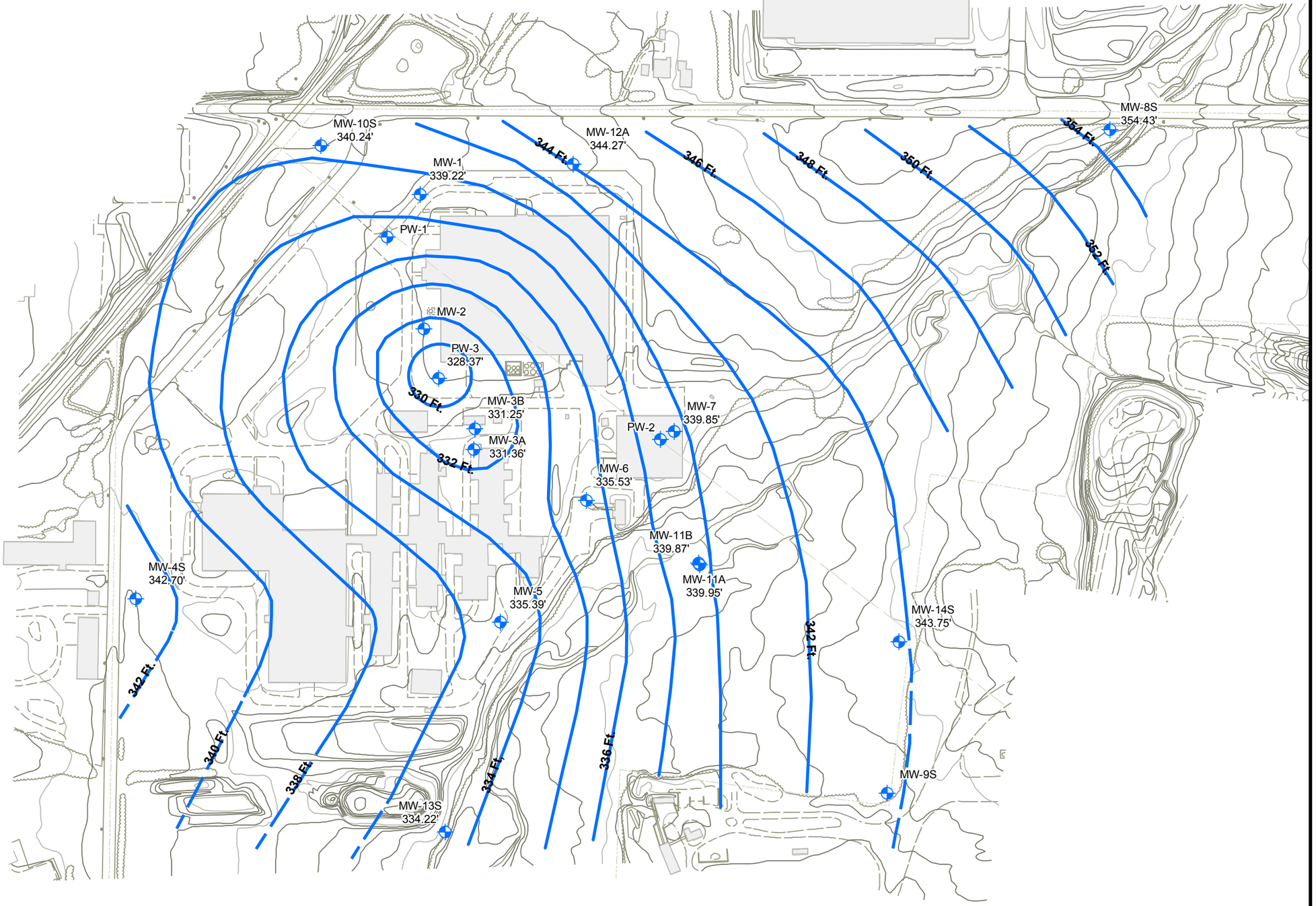
Jake Ferry, P.E.
Project Manager

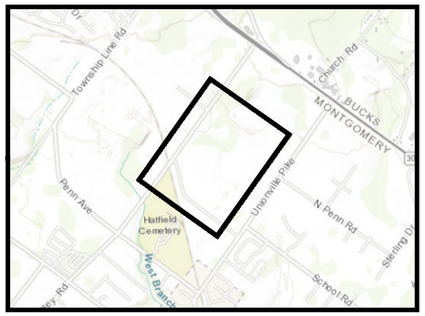
Enclosures: Tables 1 through 6
Figures A and 1 through 4

cc: D. Armstrong, PADEP
T. Deeney, AMETEK
M. Berg, Madelaine R. Berg, Esq. LLC
W. Ponticello, Penn E&R
R. Dulcey, ERM

Figure A
North Penn Area 2 Superfund Site
Estimated Pounds VOCs Remaining







Legend

- Shallow Monitoring Well (4/30/2018)
- Pontentiometric Surface Contour (Ft.)-Dashed where inferred

NOTES:

1. Based on April 30, 2018 Event.
2. DWG. NO. 1188, "Penn Color, Inc. Formerly Ametek, Inc." 4/17/2000, James M. Stewart, Inc. Land Surveyors Philadelphia, Pennsylvania

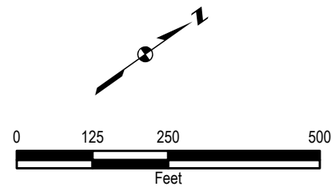
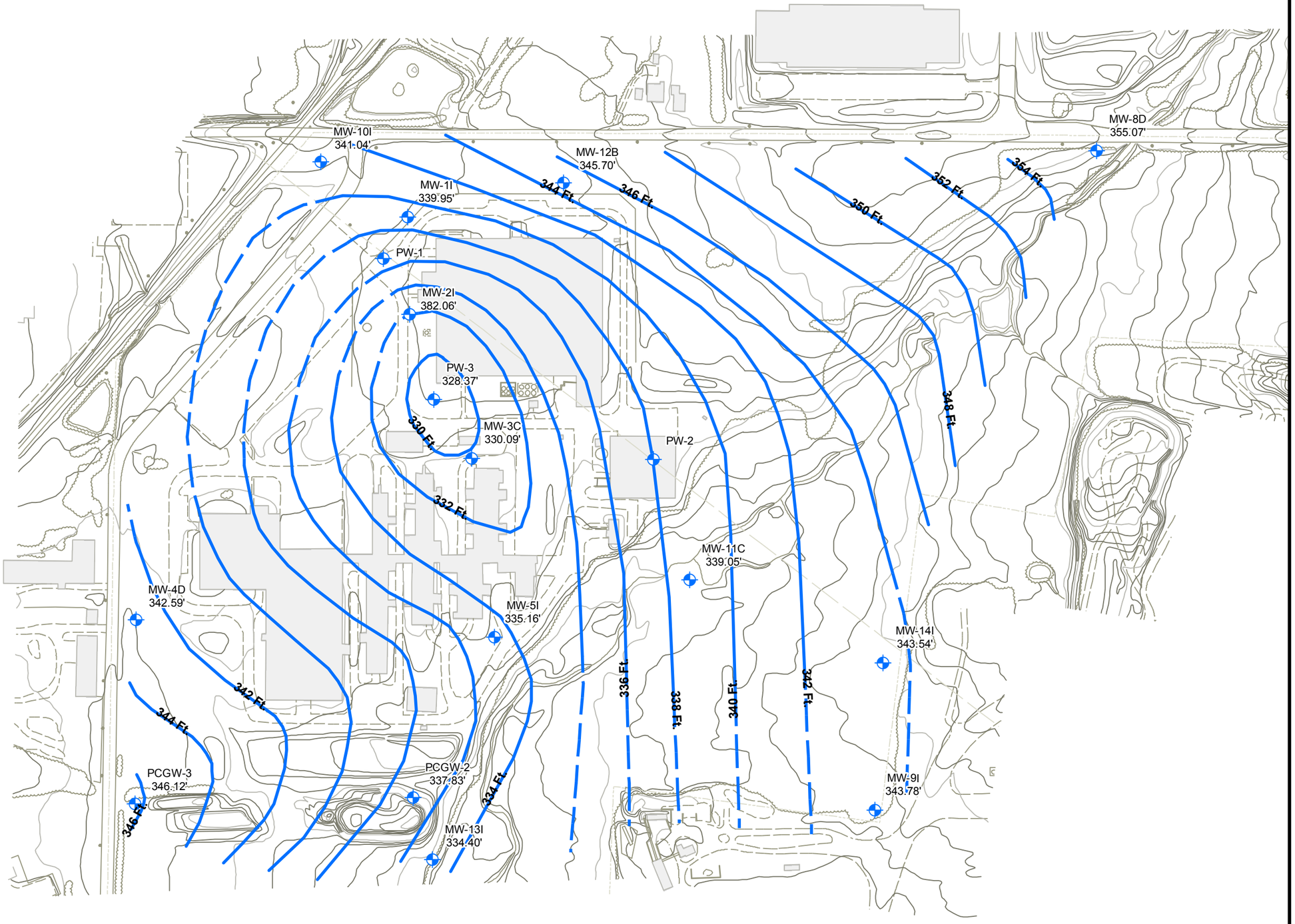
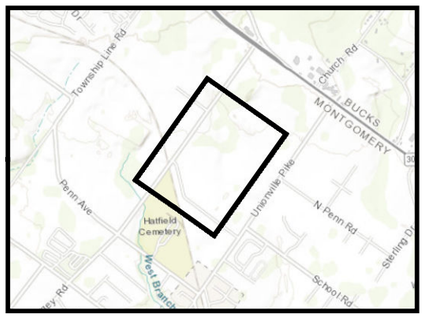


FIGURE 1
Shallow Potentiometric Contour Map
April 30, 2018
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania

ERM

J:\Projects\NorthPenn\Ametek-Area2_MXD\GroundwaterShallowContourMap\April2018_20180521.mxd - steven.vickery - 5/23/2018





Legend

- Intermediate Monitoring Well (4/30/2018)
- Pontentiometric Surface Contour (Ft.)-Dashed where inferred

NOTES:

1. Based on April 2018 Event.
2. DWG. NO. 1188, "Penn Color, Inc. Formerly Ametek, Inc." 4/17/2000, James M. Stewart, Inc. Land Surveyors Philadelphia, Pennsylvania

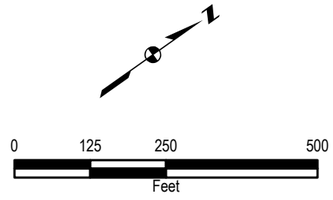


FIGURE 2
Intermediate Potentiometric Contour Map
April 30, 2018
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania
May 2018

ERM

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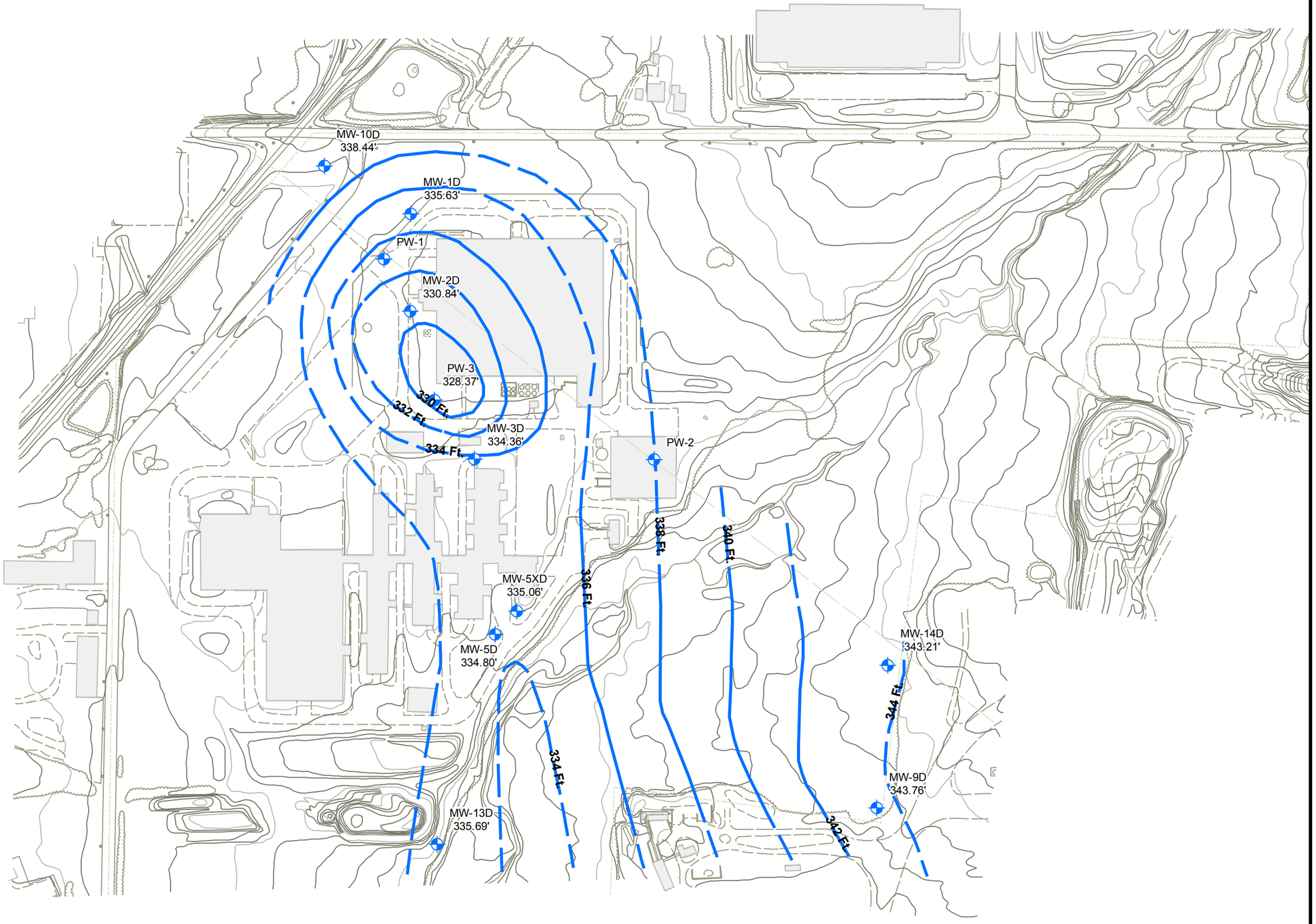

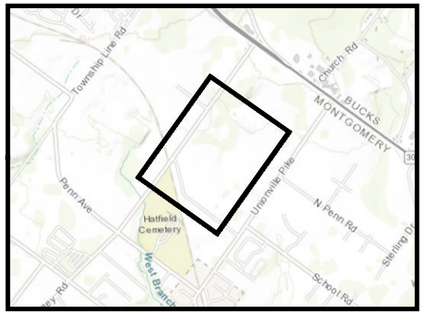

Legend

- Deep Monitoring Well (4/30/2018)
- Pontentiometric Surface Contour (Ft.)-Dashed where inferred

NOTES:

1. Based on April 2018 Event.
2. DWG. NO. 1188, "Penn Color, Inc. Formerly Ametek, Inc." 4/17/2000, James M. Stewart, Inc. Land Surveyors Philadelphia, Pennsylvania

N

0 125 250 500

Feet

FIGURE 3

Deep Potentiometric Contour Map
April 30, 2018
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania
May 2018

ERM

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SS-B1-04		
Compound	Nov-17	Mar-18
1,1 - DCE	**100**	**16**
1,4-Dioxane	**1.1**	ND
PCE	**93**	**32**
TCE	**580**	**200**
VC	ND	ND

SS-B1-05		
Compound	Nov-17	Mar-18
1,1 - DCE	**4.3**	**3.4**
1,4-Dioxane	ND	ND
PCE	**7.3**	**5.7**
TCE	**4**	**9.9**
VC	ND	ND

SS-B1-06		
Compound	Nov-17	Mar-18
1,1 - DCE	**580**	**380**
1,4-Dioxane	ND	ND
PCE	**980**	**590**
TCE	**2,100**	**1,300**
VC	ND	ND

SS-B1-03		
Compound	Nov-17	Mar-18
1,1 - DCE	**500,000**	**400,000**
1,4-Dioxane	ND	ND
PCE	**11,000**	**4,400**
TCE	**150,000**	**100,000**
VC	**130**	**89**

SS-B1-02		
Compound	Nov-17	Mar-18
1,1 - DCE	**41,000**	**34,000**
1,4-Dioxane	ND	ND
PCE	**8,200**	**6,400**
TCE	**360,000**	**390,000**
VC	ND	ND

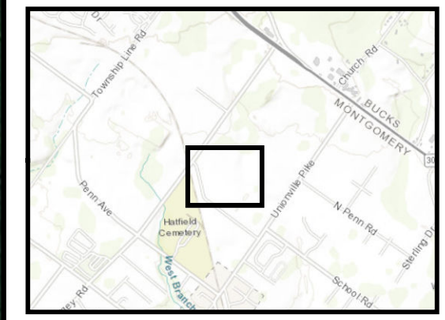
SS-HVAC-02		
Compound	Nov-17	Mar-18
1,1 - DCE	ND	ND
1,4-Dioxane	**1.4**	ND
PCE	**16**	**4.7**
TCE	**1.7**	**1.3**
VC	ND	ND

SS-B1-01		
Compound	Nov-17	Mar-18
1,1 - DCE	**1,500**	**420**
1,4-Dioxane	ND	ND
PCE	**1,500**	**230**
TCE	**39,000**	**11,000**
VC	**16**	ND

SS-MS-01		
Compound	Nov-17	Mar-18
1,1 - DCE	ND	ND
1,4-Dioxane	ND	ND
PCE	ND	ND
TCE	**1.6**	**1.2**
VC	ND	ND

SS-HVAC-01		
Compound	Nov-17	Mar-18
1,1 - DCE	ND	ND
1,4-Dioxane	ND	ND
PCE	**15,000**	**3,900**
TCE	**110**	**140**
VC	ND	ND

SS-MS-02		
Compound	Nov-17	Mar-18
1,1 - DCE	ND	ND
1,4-Dioxane	ND	ND
PCE	ND	ND
TCE	**2.5**	**2.2**
VC	ND	ND



Legend

- Approximate Sub-Slab Sampling Locations
- Shallow Monitoring Well
- Groundwater TCE Contour Buffer (100 Ft.)
- Groundwater TCE Contour (5 µg/L)

Notes
All sampling locations are approximated
1,1 - DCE = 1,1 - Dichloroethene
PCE = Tetrachloroethene
TCE = Trichlorethene
VC = Vinyl Chloride
ND = Compound not detected above the Reporting Detection Limit
Bolded values indicate sample results greater than the Reporting Detection Limit
All sample results are reported in micrograms per cubic meter (µg/m³)

N

0 75 150 300
Feet

FIGURE 4
November 2017 and March 2018 Sub-Slab Sample Results
North Penn Area 2 Superfund Site Hatfield Township, Pennsylvania
March 2018

ERM

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Table 1
Groundwater Sampling Results - April/May 2018
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania

	CLIENT ID:	MW-2S			MW-2I			MW-2D			MW-3A			MW-3B			MW-3C			MW-3D		
	LAB ID:	9584505			9602956			9602957			9594396			9594395			9594394			9594397		
	COLLECTION DATE:	4/30/2018			5/9/2018			5/9/2018			5/4/2018			5/4/2018			5/4/2018			5/4/2018		
	SAMPLE MATRIX:	Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater		
	SAMPLE UNITS:	µg/L			µg/L			µg/L			µg/L			µg/L			µg/L			µg/L		
Analyte	Cleanup Standard* (µg/L)	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
Volatile Organic Compounds																						
Carbon Tetrachloride	5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
1,2-Dichloroethane	5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
1,1- Dichloroethene	7	**540**		5	**12**		0.5	**5**		0.5	**8**		0.5	**40**		0.5	**140**		0.5	**95**		0.5
cis-1,2-Dichloroethene	70	**11**		0.5	**12**		0.5	ND		0.5	**18**		0.5	**18**		0.5	**83**		0.5	**8**		0.5
Tetrachloroethene	5	**18**		0.5	ND		0.5	ND		0.5	**260**		5	**5**		0.5	**5**		0.5	**4**		0.5
Trichloroethene	5	**650**		5	**23**		0.5	**13**		0.5	**100**		0.5	**240**		0.5	**260**		0.5	**230**		0.5
Vinyl Chloride	2	>0.5		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	**2**		0.5	ND		0.5
Semivolatile Organic Compounds																						
1,4-Dioxane	6.1	**27**		1	ND		2	ND		2	**9**		2	**9**		2	**21**		2	**9**		2
Dissolved Metals																						
Antimony	6	ND		0.45	**0.72**	**J**	0.45	ND		0.45	ND		0.45	ND		0.45	ND		0.45	ND		0.45
Arsenic	10	**0.85**	**J**	0.72	**1.6**	**J**	0.72	**10**		0.72	ND		0.72	**1.8**	**J**	0.72	**14.2**		0.72	**12.4**		0.72
Manganese	217	**2**	J	1.6	ND		1.6	**43.6**		1.6	**4.8**	**J**	1.6	ND		1.6	**77.5**		1.6	**40.8**		1.6
Thallium	0.5	ND		0.12	ND		0.12	ND		0.12	ND		0.12	ND		0.12	ND		0.12	ND		0.12

	CLIENT ID:	MW-5S			MW-5I			DUP-050318**			MW-5D			MW-5XD			MW-6S			MW-7S		
	LAB ID:	9594391			9594389			9594390			9602954			9594392			9602953			9602952		
	COLLECTION DATE:	5/3/2018			5/3/2018			5/3/2018			5/8/2018			5/3/2018			5/8/2018			5/8/2018		
	SAMPLE MATRIX:	Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater		
	SAMPLE UNITS:	µg/L			µg/L			µg/L			µg/L			µg/L			µg/L			µg/L		
Analyte	Cleanup Standard* (µg/L)	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
Volatile Organic Compounds																						
Carbon Tetrachloride	5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
1,2-Dichloroethane	5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
1,1- Dichloroethene	7	ND		0.5	**34**		0.5	**35**		0.5	**12**		0.5	ND		0.5	ND		0.5	ND		0.5
cis-1,2-Dichloroethene	70	**7**		0.5	**4**		0.5	**4**		0.5	**2**		0.5	ND		0.5	ND		0.5	ND		0.5
Tetrachloroethene	5	**4**		0.5	**7**		0.5	**8**		0.5	**2**		0.5	ND		0.5	ND		0.5	ND		0.5
Trichloroethene	5	**21**		0.5	**76**		0.5	**78**		0.5	**61**		0.5	ND		0.5	**9**		0.5	**2**		0.5
Vinyl Chloride	2	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
Semivolatile Organic Compounds																						
1,4-Dioxane	6.1	ND		2	**7**		2	**7**		2	**6**		2	ND		2	ND		2	ND		2
Dissolved Metals																						
Antimony	6	ND		0.45	ND		0.45	ND		0.45	ND		0.45	ND		0.45	ND		0.45	ND		0.45
Arsenic	10	**19.3**		0.72	**9.9**		0.72	**9.6**		0.72	**16.5**		0.72	**23.5**		0.72	**1.5**	**J**	0.72	ND		0.72
Manganese	217	**579**		1.6	**143**		1.6	**188**		1.6	**19.4**		1.6	**27.1**		1.6	**88.2**		1.6	ND		1.6
Thallium	0.5	ND		0.12	ND		0.12	ND		0.12	ND		0.12	ND		0.12	ND		0.12	ND		0.12

Notes:
* Cleanup Standard as listed in Record of Decision.
** Dup-050118 collected at MW-11B
Dup-050318 collected at MW-5I
MDL: Medium Detection Limit
Q: Lab Qualifier
J: Indicates an estimated value between the MDL and the Practical Quantitation Limit (PQL) for the analyte.
E: Result estimated because it exceeded the calibration range of the instrument
Bolded values indicate results greater than MDL.
Highlighted values indicate results exceed the cleanup standard.
ND: Non Detect
NS: Not Sampled

Table 1
Groundwater Sampling Results - April/May 2018
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania

CLIENT ID:		MW-9I			MW-11A			MW-11B			DUP-050118**			MW-11C			MW-13S			MW-13I		
LAB ID:		9589414			9589418			9589416			9589417			9589415			9592088			9592090		
COLLECTION DATE:		5/1/2018			5/1/2018			5/1/2018			5/1/2018			5/1/2018			5/2/2018			5/2/2018		
SAMPLE MATRIX:		Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater			Groundwater		
SAMPLE UNITS:		µg/L			µg/L			µg/L			µg/L			µg/L			µg/L			µg/L		
Analyte	Cleanup Standard* (µg/L)	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
Volatile Organic Compounds																						
Carbon Tetrachloride	5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
1,2-Dichloroethane	5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
1,1- Dichloroethene	7	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
cis-1,2-Dichloroethene	70	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
Tetrachloroethene	5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
Trichloroethene	5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
Vinyl Chloride	2	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
Semivolatile Organic Compounds																						
1,4-Dioxane	6.1	ND		2	ND		2	ND		2	ND		2	ND		2	ND		2	ND		2
Dissolved Metals																						
Antimony	6	ND		0.45	ND		0.45	ND		0.45	ND		0.45	ND		0.45	ND		0.45	ND		0.45
Arsenic	10	**3.8**		0.72	ND		0.72	ND		0.72	**0.85**	**J**	0.72	**3.2**		0.72	**2.9**		0.72	**8.1**		0.72
Manganese	217	ND		1.6	ND		1.6	ND		1.6	ND		1.6	**20.9**		1.6	**11.7**		1.6	**43.6**		1.6
Thallium	0.5	ND		0.12	ND		0.12	ND		0.12	ND		0.12	ND		0.12	ND		0.12	ND		0.12

CLIENT ID:		MW-13D			MW-14I			PCGW-2			PW-3		
LAB ID:		9592089			9589413			9592087			9584504		
COLLECTION DATE:		5/2/2018			5/2/2018			5/2/2018			4/30/2018		
SAMPLE MATRIX:		Groundwater			Groundwater			Groundwater			Groundwater		
SAMPLE UNITS:		µg/L			µg/L			µg/L			µg/L		
Analyte	Cleanup Standard* (µg/L)	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
Volatile Organic Compounds													
Carbon Tetrachloride	5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
1,2-Dichloroethane	5	ND		0.5	ND		0.5	ND		0.5	ND		0.5
1,1- Dichloroethene	7	ND		0.5	ND		0.5	ND		0.5	**220**		0.5
cis-1,2-Dichloroethene	70	ND		0.5	ND		0.5	ND		0.5	**11**		0.5
Tetrachloroethene	5	ND		0.5	ND		0.5	ND		0.5	**54**		0.5
Trichloroethene	5	ND		0.5	ND		0.5	ND		0.5	**550**		5
Vinyl Chloride	2	ND		0.5	ND		0.5	ND		0.5	>0.5		0.5
Semivolatile Organic Compounds													
1,4-Dioxane	6.1			2	ND		2	ND		2	**16**		1
Dissolved Metals													
Antimony	6	ND		0.45	ND		0.45	ND		0.45	ND		0.45
Arsenic	10	**16.1**		0.72	**4.1**		0.72	**4.8**		0.72	**3.7**		0.72
Manganese	217	**18.1**		1.6	ND		1.6	**84.5**		1.6	**41.1**		1.6
Thallium	0.5	ND		0.12	ND		0.12	ND		0.12	ND		0.12

Notes:
* Cleanup Standard as listed in Record of Decision.
** Dup-050118 collected at MW-11B
Dup-050318 collected at MW-5I
MDL: Medium Detection Limit
Q: Lab Qualifier
J: Indicates an estimated value between the MDL and the Practical Quantitation Limit (PQL) for the analyte.
E: Result estimated because it exceeded the calibration range of the instrument
Bolded values indicate results greater than MDL.
Highlighted values indicate results exceed the cleanup standard.
ND: Non Detect
NS: Not Sampled

Table 2
Surface Water Sampling Results - April 2018
North Penn Area 2 Superfund Site
Hatfield Township, PA

CLIENT ID:		SMP-0			SMP-1			SMP-2			SMP-3		
LAB ID:		9584502, 9589145			9584501, 9589144			9584500, 9589143			9584499, 9589119		
COLLECTION DATE:		4/30/2018			4/30/2018			4/30/2018			4/30/2018		
SAMPLE MATRIX:		Surface Water			Surface Water			Surface Water			Surface Water		
SAMPLE UNITS:		µg/L			µg/L			µg/L			µg/L		
Analyte	Surface Water Criteria* (µg/L)	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL	Result	Q	MDL
Volatile Organic Compounds													
Carbon Tetrachloride	0.23	ND		0.1	ND		0.1	ND		0.1	ND		0.1
1,2-Dichloroethane	0.38	ND		0.1	ND		0.1	ND		0.1	ND		0.1
1,1-Dichloroethene	33	ND		0.1	ND		0.1	ND		0.1	ND		0.1
Tetrachloroethene	0.69	ND		0.1	ND		0.1	ND		0.1	ND		0.1
Trichloroethene	2.5	ND		0.1	ND		0.1	ND		0.1	**0.1**	**J**	0.1
Vinyl Chloride	0.025	ND		0.010	ND		0.010	ND		0.010	ND		0.010
Dissolved Metals													
Chromium	NA**	ND		3.3	ND		3.3	ND		3.3	ND		3.3
Trivalent Chromium waters	101	ND		10	ND		10.0	ND		10.0	ND		10.0
Hexavalent Chromium	**	ND		10	ND		10.0	ND		10.0	ND		10.0
Zinc	163	ND		6.5	ND		6.5	**7.0**	**J**	6.5	ND		6.5
Cadmium	0.32	ND		0.2	ND		0.150	ND		0.150	ND		0.150
Lead	3.79	**0.12**	**J**	0.11	ND		0.110	ND		0.110	ND		0.110
Total Metals													
Antimony	5.6	ND		0.45	ND		0.45	ND		0.45	ND		0.45
Arsenic	10	ND		0.72	ND		0.72	ND		0.72	ND		0.72
Thallium	0.24	ND		0.12	ND		0.12	ND		0.12	ND		0.12

Notes:
* Criteria are the lower value of the Fish and Aquatic Life Continuous Criteria and the Human Health Criteria. See Table 1 in Remedial Action Sampling and Analysis Plan.
** Chromium III = Total Chromium - Hexavalent Chromium. Calculation performed by the laboratory.
Only Chromium III is needed for the site requirements
MDL: Method Detection Limit
Q: Lab Qualifier
J: Indicates an estimated value between the MDL and the Practical Quantitation Limit (PQL) for the analyte.
Bold values indicate results greater than MDL.
Highlighted values indicate results exceed the cleanup standard.
ND: Not Detected
NS: Not Sampled

Table 3
Performance Data for PW-1 and PW-3 Operation
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania
Updated 7 June 2018

Date and Time	Totalizer Reading (gal)	Total Flow (gal)	Average Flow for Period (gpm)	Average Flow for Period (gpd)	Total VOC Conc in Well (ug/l)	Cumulative Pounds VOCs Removed	Efficiency - Pounds removed/ 100K gal	Removal Rate - Pounds/ year @ 20,000 gpd
PW-1 Operation								
01/01/01 12:00								
04/28/02 14:00		9,641,700	13.9	20,000	**809**	65	0.7	49
PW-3 Operation								
12/14/02 15:56	3,470,840	5,945,840	14.8	21,326	4,170	240	3.5	254
12/04/03 11:00	10,897,332	13,372,332	14.0	20,138	**3,351**	472	2.8	204
12/21/04 08:30	18,837,960	21,312,960	14.0	20,171	1,619	627	1.4	99
11/07/05 16:03	25,622,360	28,097,360	15.3	21,978	1,602	727	1.3	98
12/18/06 08:00	3,147,400	36,874,830	30.1	43,276	2,000	846	1.7	122
12/10/07 10:04	10,148,650	43,876,080	12.2	17,556	**1,618**	965	1.4	99
12/11/08 10:27	6,734,020	51,983,032	14.5	20,828	**869**	1,050	0.7	53
11/30/09 07:45	4,145,450	59,125,462	14.1	20,356	981	1,110	0.8	60
12/23/10 15:01	1,820,650	67,867,920	17.4	25,049	659	1,171	0.5	40
12/15/11 09:35	4,307,990	76,695,207	17.4	25,125	**725**	1,221	0.6	44
12/13/12 08:28	2,264,504	84,044,677	14.1	20,321	693	1,261	0.6	42
12/19/13 09:42	9,025,402	90,805,575	9.8	14,128	803	1,306	0.7	49
12/30/14 09:38	16,676,354	98,456,527	10.3	14,818	745	1,355	0.6	45
12/22/15 09:20	23,608,432	105,388,605	13.0	18,650	753	1,396	0.6	46
12/06/16 07:30	30,673,869	112,454,042	13.9	20,014	**730**	1,444	0.6	44
12/07/17 10:30	38,320,799	120,100,972	13.9	19,988	820	1,499	0.7	50
01/04/18 09:39	38,854,318	120,634,491	13.2	19,078	820	1,502	0.7	50
02/07/18 13:05	39,707,075	121,487,248	17.3	24,976	820	1,508	0.7	50
03/01/18 10:07	40,343,319	122,123,492	20.2	29,084	820	1,512	0.7	50
04/06/18 09:13	40,931,024	122,711,197	11.3	16,342	820	1,516	0.7	50
05/04/18 14:00	41,454,629	123,234,802	12.9	18,568	820	1,520	0.7	50
06/07/18 10:42	42,004,376	123,784,549	11.3	16,235	820	1,524	0.7	50

Key Dates

3/18/10 - Pump pulled and cleaned; new Totalizer/Flow Meter installed.
3/18/10 cont. - End reading = 6,208,500 gal; new meter start at 0 gal.
5/20/10 - Replaced liquid (non-motor) end of the pump (Goulds 18GS07).
9/9/10 - Penn Color reported the pump stopped working in the morning.
9/15/10 - Installed new pump (Goulds 18GS10422C, 1hp). Replaced pump control box with 15A breaker and enclosure (previous control box not rated for 1hp motor).
10/19/10 - Flow meter problem observed.
10/21/10 - New totalizer/flow meter installed. End reading = 4,858,758; New meter start at 0 gal.
4/8/11 - Due to site transformer problem disrupting electric power supply to pump, pump did not operate for approx. 1 day.
5/17/11 - PW-3 sampled during Remedial Design groundwater monitoring event. Value listed in table on 5/16/11 date.
6/22/11 - New totalizer/flow meter installed. End reading = 6,339,947; New meter start at 0 gal.
6/19/12 - New flow meter and automated system installed (RA implementation). End reading = 8,158,592 gal; New meter start at 0 gal.
8/30/12 - Data indicate pump did not operate 7/18/12 17:35 through 7/23/12 08:50, or 7/26/12 19:20 through 7/27/12 11:05. Alerts programming issues still being investigated.
8/30/12 - Flow meter total reset to 0 gal. End reading prior to reset = 1,234,364 gal.
11/8/12 - The October reading was delayed due to Hurricane Sandy.
10/7/13 - The pump was cleaned to try to increase the flow rate.
12/29/13 - The pump stopped working.
1/8/14 - Removed old pump and riser pipe. Riser pipe restricted due to buildup. Identified the need for 3-phase motor.
1/10/14 - Installed new pump (Goulds 18GS10422C, 1hp, with 3-phase 230V motor CentriPro M10432 100C313) and new 1" 160 psi black poly riser pipe.
12/26/14 - 12/30/14 - Pump shut down due to full bag filter on Penn E&R treatment system.
2/27/15 - The pump had been shut down for a period of time due to full bag filter on Penn E&R treatment system.
3/10/15 - Replaced pump motor (Goulds 18GS10, serial # A1549302) and riser pipe. Pump set at 100' bgs.
3/29/16 - Replaced pump wet end (Goulds 18GS10, 8 stage, 4", 1HP), not the motor, and riser pipe. Pump set at 100' bgs.
3/28/17 - Replaced pump wet end (Goulds 18GS10, 8 stage, 4", 1HP), not the motor, and riser pipe. Pump set at 100' bgs.
1/9/18 - Replaced pump wet end (Goulds 18GS10, 8 stage, 4", 1HP), not the motor, and riser pipe. Pump set at 100' bgs.

Total VOC Concentration Basis

Values in **bold** are actual sample results.
Values for dates between samples are the average of the two samples.
Values after the most recent sample date are roll-forward values and will be updated once the next sample result is obtained.

Notes: Results from 6/1/05 through 12/15/11 include Freon 113 (typically <10 ug/l) and TCFM (typically <20 ug/l) which were not previously included in total VOCs.
For 2002 - 2017, spreadsheet rows compressed (hidden) to show only last data for the year in order to save space on table, but all data are preserved.

Table 4
Performance Data for MW-2 Operation
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania
Updated 7 June 2018

Date and Time	Pump Cycle Count	Total Flow (gal) - 0.07 gal/cycle	Average Flow for Period (gpm)	Average Flow for Period (gpd)	Total VOC Conc in Well (ug/l)	Cumulative Pounds VOCs Removed	Removal Efficiency - Pounds removed/ 100K gal	Removal Rate - Pounds/ year @ 400 gpd
MW-2 Operation								
12/21/04 08:30	1,600,000	112000	0.403	581	19,528	17.5	16.3	24
11/07/05 16:03	3,412,970	238908	0.513	739	15,150	40.2	12.6	18
12/18/06 08:00	6,997,105	489797	0.069	99	14,205	68.8	11.9	17
12/10/07 10:14	6,997,131	489799	0.000	0	14,205	68.8	0.0	
12/11/08 10:24	9,324,448	552645	0.612	882	**10,120**	78.9	8.4	12
11/30/09 07:42	11,333,363	693269	0.241	347	16,266	91.4	13.6	20
11/17/10 09:16	12,952,765	806627	0.007	10	**9,357**	105.0	7.8	11
12/23/10 15:01	13,040,011	812734	0.107	154	9,531	105.5	8.0	12
12/15/11 09:35	14,454,676	911761	0.537	773	**11,822**	114.0	9.9	14
12/13/12 08:28	17,751,367	1142529	0.481	693	10,889	130.2	9.1	13
12/19/13 09:42	21,099,680	1376911	0.425	612	15,413	158.4	12.9	19
12/30/14 09:38	23,758,563	1563033	0.381	549	10,822	180.2	9.0	13
12/22/15 09:20	969,132	1630876	0.175	251	4,392	184.3	3.7	5
12/06/16 07:30	2,928,310	1768018	0.232	334	**2,327**	188.4	1.9	3
12/07/17 10:30	5,265,210	1931601	0.316	455	4,090	194.1	3.4	5
01/04/18 09:39	5,422,803	1942633	0.294	423	4,090	194.7	3.4	5
02/07/18 13:05	5,634,371	1957443	0.289	416	4,090	194.9	3.4	5
03/01/18 10:07	5,866,846	1973716	0.385	555	4,090	195.8	3.4	5
04/06/18 09:13	6,156,347	1993981	0.439	632	4,090	196.2	3.4	5
05/04/18 14:00	6,338,910	2006760	0.358	515	4,090	196.9	3.4	5
06/07/18 10:42	6,613,720	2025997	0.358	516	4,090	197.3	3.4	5

Key Dates

1/27/10 - Pump was shut down by Penn Color for previous 36 hours, due to rain flooding event.
3/18/10 - Pump pulled and cleaned; replaced pressure gage.
9/15/10 - Pump pulled and cleaned.
10/15/10 - Pump reading indicated pump no functioning.
10/21/10 - Pump inspected and determined to be unfixable.
11/8/10 - Replacement pump installed (QED AP2B Short).
5/17/11 - MW-2 sampled during Remedial Design groundwater monitoring event. Value listed in table on 5/16/11 date.
6/22/11 - Pump operating but reading not obtained; so used average of adjacent table values.
9/27/11 - Pump operating but reading not obtained; so used average of adjacent table values.
6/19/12 - Pump operating but reading not obtained; so used average of adjacent table values.
11/8/12 - The October reading was delayed due to Hurricane Sandy.
4/7/15 - Replaced cycle counter. It was discovered to have been malfunctioning since sometime in January, though the pump had been operating correctly.

Total VOC Concentration Basis

Values in **bold** are actual sample results.
Values for dates between samples are the average of the two samples.
Values after the most recent sample date are roll-forward values and will be updated once the next sample result is obtained.

Notes: Results from 6/1/05 on include Freon 113 (7 ug/l) and TCFM (19 ug/l) which were not previously included in total VOCs.
For 2002 - 2017 spreadsheet rows compressed (hidden) to show only last data for the year in order to save space on table, but all data are preserved.

Table 5
Performance Data for All Recovery Wells
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania
Updated 7 June 2018

Pumps Operated	Date and Time	Cumulative Pounds VOCs Removed	% of VOCs Removed	Estimated Pounds VOCs Remaining	Total Flow	Average Flow for Period (gpd)
PW-1	01/01/01 12:00			2,576		
	04/28/02 14:00	65	2.6%	2,511		20,000
PW-3	04/29/02 14:00			2,511		
	12/14/02 15:56	240	9.6%	2,271		21,326
	12/04/03 11:00	472	18.8%	2,039		20,138
PW-3 & MW-2	08/16/04 12:10	593	23.6%	1,918		22,605
	12/21/04 08:30	644	25.7%	1,867		20,751
	11/07/05 16:03	767	30.5%	1,744		22,717
	12/18/06 08:00	915	36.4%	1,596	37,364,627	43,375
	12/10/07 10:04	1,034	41.2%	1,477	44,365,879	17,556
	12/11/08 10:27	1,129	45.0%	1,382	52,535,677	21,710
	11/30/09 07:45	1,201	47.8%	1,310	59,818,731	20,703
	12/23/10 15:01	1,277	50.9%	1,234	68,680,654	23,429
	12/15/11 09:35	1,335	53.2%	1,176	77,606,968	25,898
	12/13/12 08:28	1,392	55.4%	1,119	85,187,206	21,014
	12/19/13 09:42	1,464	58.3%	1,047	92,182,486	14,739
	12/30/14 09:38	1,535	61.1%	976	100,019,560	15,367
	12/22/15 09:20	1,581	62.9%	930	107,019,481	18,901
	12/06/16 07:30	1,632	65.0%	879	114,222,060	20,348
	12/07/17 10:30	1,693	67.4%	818	122,032,573	20,443
	01/04/18 09:39	1,697	67.6%	814	122,577,124	19,501
	02/07/18 13:05	1,703	67.8%	808	123,444,691	25,392
	03/01/18 10:07	1,708	68.0%	803	124,097,208	29,638
	04/06/18 09:13	1,713	68.2%	798	124,705,178	16,974
	05/04/18 14:00	1,717	68.4%	794	125,241,562	19,083
	06/07/18 10:42	1,721	68.5%	790	125,810,546	16,751
				Average (~last 6 months)		20,757

Notes: For 2002 - 2017 spreadsheet rows compressed to show only last data for the year in order to save space on table, but all data are preserved.

8/30/12 - PW-3 flow meter reading/programming issue.

Table 6
Water Level Data: 30 April 2018
North Penn Area 2 Superfund Site
Hatfield Township, Pennsylvania

Date	Well	Top of Casing Elevation (ft amsl)	Depth to Water (ft below top of inner casing)	Water Level Elevation (ft amsl)	Notes
4/30/2018	MW-1	354.34	15.12	339.22	
4/30/2018	MW-1I	354.3	14.35	339.95	
4/30/2018	MW-1D	354.22	18.59	335.63	
4/30/2018	MW-2	355.33	--	--	Not collected
4/30/2018	MW-2I	353.13	21.07	332.06	
4/30/2018	MW-2D	353.38	22.55	330.83	
4/30/2018	MW-3A	348.72	17.36	331.36	
4/30/2018	MW-3B	353.18	21.93	331.25	
4/30/2018	MW-3C	348.59	18.50	330.09	
4/30/2018	MW-3D	348.88	14.52	334.36	
4/30/2018	MW-4S	354.5	11.80	342.70	
4/30/2018	MW-4D	353.51	10.92	342.59	
4/30/2018	MW-5	346.68	11.29	335.39	
4/30/2018	MW-5I	348.84	13.68	335.16	
4/30/2018	MW-5D	349.12	14.32	334.80	
4/30/2018	MW-5XD	348.73	13.67	335.06	
4/30/2018	MW-6	347.23	11.70	335.53	
4/30/2018	MW-7	350.28	10.43	339.85	
4/30/2018	MW-8S	362.72	8.29	354.43	
4/30/2018	MW-8D	363.08	8.01	355.07	
4/30/2018	MW-9S	347.64	3.71	343.93	
4/30/2018	MW-9I	348.63	4.85	343.78	
4/30/2018	MW-9D	347.99	4.23	343.76	
4/30/2018	MW-10S	354.29	14.05	340.24	
4/30/2018	MW-10I	355.13	14.09	341.04	
4/30/2018	MW-10D	354.66	16.22	338.44	
4/30/2018	MW-11A	344.14	4.19	339.95	
4/30/2018	MW-11B	344.2	4.33	339.87	
4/30/2018	MW-11C	343.89	4.84	339.05	
4/30/2018	MW-12A	355.31	11.04	344.27	
4/30/2018	MW-12B	354.91	9.21	345.70	
4/30/2018	MW-13S	341.78	7.56	334.22	
4/30/2018	MW-13I	340.89	6.49	334.40	
4/30/2018	MW-13D	342.2	6.51	335.69	
4/30/2018	MW-14S	351.91	8.16	343.75	
4/30/2018	MW-14I	351.79	8.25	343.54	
4/30/2018	MW-14D	351.51	8.30	343.21	
4/30/2018	PCGW-2	355.91	18.08	337.83	
4/30/2018	PCGW-3	353.97	7.85	346.12	
4/30/2018	PW-3	353.47	25.10	328.37	
4/30/2018	SMP-0	342.29	-0.15	342.44	Reading relative to stream monitoring point
4/30/2018	SMP-1A	338.47	-0.26	338.73	Reading relative to stream monitoring point
4/30/2018	SMP-1B	338.21	0.01	338.20	Reading relative to stream monitoring point
4/30/2018	SMP-2A	334.53	-0.13	334.66	Reading relative to stream monitoring point
4/30/2018	SMP-2B	334.56		--	Reading relative to stream monitoring point
4/30/2018	SMP-3	335.12	1.15	333.97	Reading relative to stream monitoring point